

Analysis Report

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REVISED

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601

Stantec 1060 Andrew Drive Suite 140 West Chester PA 19380

Report Date: July 11, 2016

Project: MHIC AOI 5

Submittal Date: 06/27/2016 Group Number: 1676548 PO Number: MHIC AOI 5 State of Sample Origin: PA

> Lancaster Labs (LL) # 8448485 8448486

Client Sample Description AOI5-MW-573-1-2 Grab Soil AOI5-MW-573-3-4 Grab Soil

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratoriesenvironmental/resources/certifications/.

Electronic Copy To Electronic Copy To Evergreen c/o Stantec

Sunoco c/o Stantec

Attn: Avani Patel

Attn: Jennifer Menges

Respectfully Submitted,

Amek Carter Specialist

(717) 556-7252



Analysis Report

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Sample Description: AOI5-MW-573-1-2 Grab Soil

MHIC AOI 5

LL Sample # SW 8448485 LL Group # 1676548 # 16657 Account

Project Name: MHIC AOI 5

Collected: 06/24/2016 09:10 by DD

1060 Andrew Drive

Suite 140

Stantec

West Chester PA 19380

Drv

Submitted: 06/27/2016 17:00 Reported: 07/11/2016 08:19

573-1

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor
GC/MS	Volatiles SW-8	46 8260B	mg/kg	mg/kg	
10237	Benzene	71-43-2	0.002 J	0.0006	0.91
10237	sec-Butylbenzene	135-98-8	N.D.	0.001	0.91
10237	tert-Butylbenzene	98-06-6	N.D.	0.001	0.91
10237	Cyclohexane	110-82-7	0.004 J	0.001	0.91
10237	1,2-Dibromoethane	106-93-4	N.D.	0.001	0.91
10237	1,2-Dichloroethane	107-06-2	N.D.	0.001	0.91
10237	Ethylbenzene	100-41-4	N.D.	0.001	0.91
10237	n-Hexane	110-54-3	0.003 J	0.001	0.91
10237	Isopropylbenzene	98-82-8	N.D.	0.001	0.91
10237	Methyl Tertiary Butyl Eth	er 1634-04-4	0.0006 J	0.0006	0.91
10237	Naphthalene	91-20-3	N.D.	0.001	0.91
10237	Toluene	108-88-3	N.D.	0.001	0.91
10237	1,2,4-Trimethylbenzene	95-63-6	0.001 J	0.001	0.91
10237	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.001	0.91
10237	Xylene (Total)	1330-20-7	0.003 J	0.001	0.91
acce _] The acce _]	recovery for the sample int ptance limits. The following sample was re-analyzed and ptance limits, indicating a rted from the initial trial	ng corrective action the QC is again outs a matrix effect. The	was taken: ide of the		
GC/MS	Semivolatiles SW-8	46 8270C	mg/kg	mg/kg	
10728	Acenaphthene	83-32-9	0.14	0.020	1
10728	Anthracene	120-12-7	0.21	0.020	1
10728	Benzo(a)anthracene	56-55-3	0.25	0.020	1
10728	Benzo(a)pyrene	50-32-8	0.67	0.020	1
10728	Benzo(b)fluoranthene	205-99-2	0.27	0.020	1
10728	Benzo(g,h,i)perylene	191-24-2	0.98	0.020	1
10728	Benzo(k)fluoranthene	207-08-9	0.058 J	0.020	1
10728	1,1'-Biphenyl	92-52-4	0.14 J	0.10	1
10728	Di-n-butylphthalate	84-74-2	N.D.	0.41	1
10728	Chrysene	218-01-9	0.40	0.020	1
10728	Dibenz(a,h)anthracene	53-70-3	0.28	0.020	1
10728	Diethylphthalate	84-66-2	N.D.	0.41	1
10728	2,4-Dimethylphenol	105-67-9	N.D.	0.10	1
10728	2,4-Dinitrophenol	51-28-5	N.D.	1.8	1
10728	bis(2-Ethylhexyl)phthalat		N.D.	0.41	1
10728	Fluoranthene	206-44-0	0.22	0.020	1
10728	Fluorene	86-73-7	0.19	0.020	1
10728	Indeno(1,2,3-cd)pyrene	193-39-5	0.41	0.020	1
10728	2-Methylnaphthalene	91-57-6	1.8	0.020	1
10728	2-Methylphenol	95-48-7	N.D.	0.10	1 1
10728	4-Methylphenol	106-44-5	N.D.	0.10	1
	3-Methylphenol and 4-meth chromatographic condition for 4-methylphenol repres	s used for sample ana	lysis. The resu	lt reported	
10728	4-Nitrophenol	100-02-7	N.D.	1.0	1
10728	Phenanthrene	85-01-8	0.81	0.020	1
10728	Phenol	108-95-2	N.D.	0.10	1
10728	Pyrene	129-00-0	0.57	0.020	1
10728	Pyridine	110-86-1	N.D.	0.41	1
	-				



Analysis Report

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Sample Description: AOI5-MW-573-1-2 Grab Soil

MHIC AOI 5

LL Sample # SW 8448485 LL Group # 1676548 Account # 16657

Project Name: MHIC AOI 5

Collected: 06/24/2016 09:10 by DD

1060 Andrew Drive

Suite 140

Stantec

West Chester PA 19380

Submitted: 06/27/2016 17:00 Reported: 07/11/2016 08:19

573-1

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C	mg/kg	mg/kg	
10728	Quinoline		91-22-5	N.D.	0.20	1
-	rting limits were r			-		
Metal	s	SW-846	6010B	mg/kg	mg/kg	
06952	Cobalt		7440-48-4	8.44	0.141	1
06955	Lead		7439-92-1	369	0.645	1
06961	Nickel		7440-02-0	18.2	0.352	1
06971	Vanadium		7440-62-2	38.9	0.164	1
06972	Zinc		7440-66-6	119	0.797	1
Wet C	hemistry	SM 2540	G-1997	%	8	
00111	Moisture		n.a.	19.5	0.50	1
	Moisture represent 103 - 105 degrees					

as-received basis.

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	Evergreen Comprehensive VOCs	SW-846 8260B	1	X161813AA	06/29/2016 18:02	Patrick T Herres	0.91
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201618041649	06/24/2016 09:10	Client Supplied	1
02392	L/H Field Preserved Bisulfate	SW-846 5035A	1	201618041649	06/24/2016 09:10	Client Supplied	1
02392	L/H Field Preserved Bisulfate	SW-846 5035A	2	201618041649	06/24/2016 09:10	Client Supplied	1
10728	Skinner 8270 (microwave)	SW-846 8270C	1	16180SLF026	06/30/2016 11:51	Linda M Hartenstine	1
10812	BNA Soil Microwave Skinner	SW-846 3546	1	16180SLF026	06/29/2016 06:15	Michelle A Newswanger	1
06952	Cobalt	SW-846 6010B	1	161805708005	07/04/2016 15:12	Elaine F Stoltzfu	5 1
06955	Lead	SW-846 6010B	1	161805708005	07/04/2016 15:12	Elaine F Stoltzfu	s 1
06961	Nickel	SW-846 6010B	1	161805708005	07/04/2016 15:12	Elaine F Stoltzfu	s 1
06971	Vanadium	SW-846 6010B	1	161805708005	07/04/2016 15:12	Elaine F Stoltzfu	s 1
06972	Zinc	SW-846 6010B	1	161805708005	07/04/2016 15:12	Elaine F Stoltzfu	s 1



Analysis Report

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Sample Description: AOI5-MW-573-1-2 Grab Soil

MHIC AOI 5

LL Sample # SW 8448485 LL Group # 1676548 Account # 16657

Project Name: MHIC AOI 5

Collected: 06/24/2016 09:10 by DD

Stantec

1060 Andrew Drive

Suite 140

West Chester PA 19380

Submitted: 06/27/2016 17:00 Reported: 07/11/2016 08:19

573-1

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05708	ICP-ICPMS - SW, 3050B -	SW-846 3050B	1	161805708005	06/29/2016 06:30	Lisa J Cooke	1
00111	Moisture	SM 2540 G-1997	1	16187820004A	07/05/2016 18:31	Scott W Freisher	1



Analysis Report

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Sample Description: AOI5-MW-573-3-4 Grab Soil

MHIC AOI 5

LL Sample # SW 8448486 LL Group # 1676548 # 16657 Account

Dilution

Project Name: MHIC AOI 5

Collected: 06/24/2016 09:25 by DD

1060 Andrew Drive

Drv

Method

Suite 140

Stantec

Submitted: 06/27/2016 17:00

Dry

West Chester PA 19380 Reported: 07/11/2016 08:19

573-2

CAT

No.	Analysis Name	CAS Number	Result	Method Detection Limit	Factor
			,	/•	
•	Volatiles SW-846		mg/kg	mg/kg	
10237	Benzene	71-43-2	0.008 J	0.0008	1.04
10237	sec-Butylbenzene	135-98-8	0.003 J	0.002	1.04
10237	tert-Butylbenzene	98-06-6	0.007 J	0.002	1.04
10237	Cyclohexane	110-82-7	0.012	0.002	1.04
10237	1,2-Dibromoethane	106-93-4	N.D.	0.002	1.04
10237	1,2-Dichloroethane	107-06-2	N.D.	0.002	1.04
10237	Ethylbenzene	100-41-4	N.D.	0.002	1.04
10237	n-Hexane	110-54-3	0.002 J	0.002	1.04
10237	Isopropylbenzene	98-82-8	N.D.	0.002	1.04
10237	Methyl Tertiary Butyl Ether	1634-04-4	0.004 J	0.0008	1.04
10237	Naphthalene	91-20-3	N.D.	0.002	1.04
10237	Toluene	108-88-3	0.006 J	0.002	1.04
10237	1,2,4-Trimethylbenzene	95-63-6	0.004 J	0.002	1.04
10237	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.002	1.04
10237	2	1330-20-7	0.011	0.002	1.04
	recovery for the sample intern				
	ptance limits. The following of				
	sample was re-analyzed and the				
	ptance limits, indicating a ma	atrix effect. The	data is		
repo	rted from the initial trial.				
GC/MS	Semivolatiles SW-846	8270C	mg/kg	mg/kg	
10728	Acenaphthene	83-32-9	N.D.	0.026	1
10728	Anthracene	120-12-7	0.23	0.026	1
10728	Benzo(a)anthracene	56-55-3	0.25	0.026	1
10728	Benzo(a)pyrene	50-32-8	0.29	0.026	1
10728	Benzo(b)fluoranthene	205-99-2	0.32	0.026	1
10728	Benzo(g,h,i)perylene	191-24-2	0.32	0.026	1
10728	Benzo(k)fluoranthene	207-08-9	0.076 J	0.026	1
10728	1,1'-Biphenyl	92-52-4	N.D.	0.13	1
10728	Di-n-butylphthalate	84-74-2	N.D.	0.52	1
10728	Chrysene	218-01-9	0.48	0.026	1
10728	Dibenz(a,h)anthracene	53-70-3	0.15	0.026	1
10728	Diethylphthalate	84-66-2	N.D.	0.52	1
10728	2,4-Dimethylphenol	105-67-9	N.D.	0.13	1
10728	2,4-Dinitrophenol	51-28-5	N.D.	2.3	1
10728	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	0.52	1
10728	Fluoranthene	206-44-0	0.26	0.026	1
10728	Fluorene	86-73-7	0.20	0.026	1
10728	Indeno(1,2,3-cd)pyrene	193-39-5	0.19	0.026	1
10728	2-Methylnaphthalene	91-57-6	0.69	0.026	1
10728	2-Methylphenol	95-48-7	N.D.	0.13	1
10728	4-Methylphenol	106-44-5	N.D.	0.13	1
	3-Methylphenol and 4-methylp				
	chromatographic conditions u				
	for 4-methylphenol represent		-		
10728	4-Nitrophenol	100-02-7	N.D.	1.3	1
10728	Phenanthrene	85-01-8	0.57	0.026	1
10728	Phenol	108-95-2	N.D.	0.13	1
10728	Pyrene	129-00-0	0.57	0.026	1
10728	Pyridine	110-86-1	N.D.	0.52	1



Analysis Report

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Sample Description: AOI5-MW-573-3-4 Grab Soil

MHIC AOI 5

LL Sample # SW 8448486 LL Group # 1676548 Account # 16657

Project Name: MHIC AOI 5

Submitted: 06/27/2016 17:00

Reported: 07/11/2016 08:19

Collected: 06/24/2016 09:25 by DD Stantec

1060 Andrew Drive

Suite 140

West Chester PA 19380

573-2

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C	mg/kg	mg/kg	
10728	Ouinoline		91-22-5	N.D.	0.26	1
-	rting limits were r			-		
Metal	5	SW-846	6010B	mg/kg	mg/kg	
06952	Cobalt		7440-48-4	11.7	0.169	1
06955	Lead		7439-92-1	92.4	0.776	1
06961	Nickel		7440-02-0	24.1	0.423	1
06971	Vanadium		7440-62-2	54.1	0.198	1
06972	Zinc		7440-66-6	112	0.960	1
Wet C	hemistry	SM 254	0 G-1997	%	%	
00111	Moisture		n.a.	35.6	0.50	1
00111			II.a.	35.6	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an

as-received basis.

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	e	Analyst	Dilution Factor
10237	Evergreen Comprehensive VOCs	SW-846 8260B	1	X161813AA	06/29/2016 1	18:25	Patrick T Herres	1.04
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201618041649	06/24/2016 0	9:25	Client Supplied	1
02392	L/H Field Preserved Bisulfate	SW-846 5035A	1	201618041649	06/24/2016 0	9:25	Client Supplied	1
02392	L/H Field Preserved Bisulfate	SW-846 5035A	2	201618041649	06/24/2016 0	9:25	Client Supplied	1
10728	Skinner 8270 (microwave)	SW-846 8270C	1	16180SLF026	06/30/2016 1	2:11	Linda M Hartenstine	1
10812	BNA Soil Microwave Skinner	SW-846 3546	1	16180SLF026	06/29/2016 0	6:15	Michelle A Newswanger	1
06952	Cobalt	SW-846 6010B	1	161805708005	07/04/2016 1	15:15	Elaine F Stoltzfus	1
06955	Lead	SW-846 6010B	1	161805708005	07/04/2016 1	15:15	Elaine F Stoltzfus	1
06961	Nickel	SW-846 6010B	1	161805708005	07/04/2016 1	15:15	Elaine F Stoltzfus	1
06971	Vanadium	SW-846 6010B	1	161805708005	07/04/2016 1	15:15	Elaine F Stoltzfus	1
06972	Zinc	SW-846 6010B	1	161805708005	07/04/2016 1	15:15	Elaine F Stoltzfus	1



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SM 2540 G-1997 1

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Sample Description: AOI5-MW-573-3-4 Grab Soil

MHIC AOI 5

LL Sample # SW 8448486 LL Group # 1676548 Account # 16657

Project Name: MHIC AOI 5

Collected: 06/24/2016 09:25 by DD

Submitted: 06/27/2016 17:00

Reported: 07/11/2016 08:19

Stantec

1060 Andrew Drive

Suite 140

West Chester PA 19380

16187820004A 07/05/2016 18:31 Scott W Freisher

573-2

00111 Moisture

Laboratory Sample Analysis Record							
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
	ICP-ICPMS - SW, 3050B -	SW-846 3050B	1	161805708005	06/29/2016 06:30	Lisa J Cooke	1



Analysis Report

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Quality Control Summary

Client Name: Stantec Group Number: 1676548

Reported: 07/11/2016 08:19

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL
	mg/kg	mg/kg
Batch number: X161813AA Benzene sec-Butylbenzene	Sample number(s): N.D. N.D.	- · ·
tert-Butylbenzene Cyclohexane	N.D.	0.001
1,2-Dibromoethane 1,2-Dichloroethane Ethylbenzene	N.D. N.D. N.D.	0.001 0.001 0.001
n-Hexane Isopropylbenzene	N.D. N.D.	0.001 0.001
Methyl Tertiary Butyl Ether Naphthalene	N.D. N.D.	0.0005 0.001
Toluene 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene	N.D. N.D. N.D.	0.001 0.001 0.001
Xylene (Total)	N.D.	0.001
Batch number: 16180SLF026 Acenaphthene	Sample number(s): N.D.	0.0033
Anthracene Benzo(a) anthracene Benzo(a) pyrene	N.D. N.D. N.D.	0.0033 0.0033 0.0033
Benzo(b) fluoranthene Benzo(g,h,i) perylene	N.D. N.D.	0.0033
Benzo(k)fluoranthene 1,1'-Biphenyl	N.D. N.D.	0.0033 0.017
Di-n-butylphthalate Chrysene	N.D. N.D.	0.067
Dibenz(a,h)anthracene Diethylphthalate 2,4-Dimethylphenol	N.D. N.D. N.D.	0.0033 0.067 0.017
2,4-Dinitrophenol bis(2-Ethylhexyl)phthalate	N.D. N.D.	0.30
Fluoranthene Fluorene	N.D. N.D.	0.0033 0.0033
<pre>Indeno(1,2,3-cd)pyrene 2-Methylnaphthalene</pre>	N.D. N.D.	0.0033 0.0033
2-Methylphenol 4-Methylphenol	N.D. N.D.	0.017 0.017
4-Nitrophenol Phenanthrene Phenol	N.D. N.D. N.D.	0.17 0.0033 0.017
Pyrene Pyridine	N.D. N.D.	0.0033 0.067

^{*-} Outside of specification

⁽¹⁾ The result for one or both determinations was less than five times the LOQ.

⁽²⁾ The unspiked result was more than four times the spike added.



Analysis Report

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Quality Control Summary

Client Name: Stantec Group Number: 1676548

Reported: 07/11/2016 08:19

Method Blank (continued)

Analysis Name	Result mg/kg	MDL mg/kg
Quinoline	N.D.	0.033
Batch number: 161805708005 Cobalt Lead Nickel Vanadium Zinc	Sample number(s): N.D. N.D. N.D. N.D. N.D.	8448485-8448486 0.120 0.550 0.300 0.140 0.680

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: X161813AA	Sample numbe	r(s): 84484	85-8448486						
Benzene	0.0200	0.0181	0.0200	0.0175	90	88	80-120	3	30
sec-Butylbenzene	0.0200	0.0176	0.0200	0.0174	88	87	64-122	1	30
tert-Butylbenzene	0.0200	0.0172	0.0200	0.0173	86	86	68-120	0	30
Cyclohexane	0.0200	0.0134	0.0200	0.0130	67	65	58-120	3	30
1,2-Dibromoethane	0.0200	0.0173	0.0200	0.0165	86	82	80-120	5	30
1,2-Dichloroethane	0.0200	0.0191	0.0200	0.0184	96	92	77-130	4	30
Ethylbenzene	0.0200	0.0184	0.0200	0.0180	92	90	80-120	2	30
n-Hexane	0.0200	0.0105	0.0200	0.0102	52	51	38-135	2	30
Isopropylbenzene	0.0200	0.0184	0.0200	0.0180	92	90	70-120	2	30
Methyl Tertiary Butyl Ether	0.0200	0.0170	0.0200	0.0165	85	83	72-120	3	30
Naphthalene	0.0200	0.0157	0.0200	0.0152	78	76	53-120	3	30
Toluene	0.0200	0.0181	0.0200	0.0178	91	89	80-120	2	30
1,2,4-Trimethylbenzene	0.0200	0.0176	0.0200	0.0174	88	87	74-120	1	30
1,3,5-Trimethylbenzene	0.0200	0.0175	0.0200	0.0172	88	86	73-120	2	30
Xylene (Total)	0.0600	0.0551	0.0600	0.0536	92	89	80-120	3	30
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 16180SLF026	Sample numbe	r(s): 84484	85-8448486						
Acenaphthene	1.67	1.64			98		83-116		
Anthracene	1.67	1.68			101		82-118		
Benzo(a)anthracene	1.67	1.56			94		76-119		
Benzo(a)pyrene	1.67	1.65			99		85-117		
Benzo(b)fluoranthene	1.67	1.77			106		78-129		
Benzo(g,h,i)perylene	1.67	1.51			91		77-118		
Benzo(k)fluoranthene	1.67	1.54			92		79-120		
1,1'-Biphenyl	1.67	1.53			92		76-111		
Di-n-butylphthalate	1.67	1.73			104		84-120		
Chrysene	1.67	1.54			92		80-121		
Dibenz(a,h)anthracene	1.67	1.59			95		81-123		
Diethylphthalate	1.67	1.71			103		81-118		
2,4-Dimethylphenol	1.67	1.57			94		83-120		
2,4-Dinitrophenol	3.33	3.17			95		16-132		
bis(2-Ethylhexyl)phthalate	1.67	1.65			99		81-121		

^{*-} Outside of specification

⁽¹⁾ The result for one or both determinations was less than five times the LOQ.

⁽²⁾ The unspiked result was more than four times the spike added.



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

REVISED

Quality Control Summary

Client Name: Stantec Group Number: 1676548

Reported: 07/11/2016 08:19

LCS/LCSD (continued)

Analysis Name	LCS Spike Added mg/kg	LCS Conc mg/kg	LCSD Spike Added mg/kg	LCSD Conc mg/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Fluoranthene	1.67	1.63			98		81-117		
Fluorene	1.67	1.65			99		86-118		
Indeno(1,2,3-cd)pyrene	1.67	1.53			92		81-118		
2-Methylnaphthalene	1.67	1.70			102		83-109		
2-Methylphenol	1.67	1.86			112		80-133		
4-Methylphenol	1.67	1.75			105		73-125		
4-Nitrophenol	1.67	1.25			75		52-133		
Phenanthrene	1.67	1.59			95		80-114		
Phenol	1.67	1.64			98		73-122		
Pyrene	1.67	1.58			95		81-114		
Pyridine	1.67	1.29			78		55-109		
Quinoline	1.67	1.82			109		80-119		
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 161805708005	Sample numbe	er(s): 84484	185-8448486						
Cobalt	50	54.03			108		80-120		
Lead	15	16			107		80-120		
Nickel	50	54.38			109		80-120		
Vanadium	50	53.16			106		80-120		
Zinc	50	52.58			105		80-120		
	%	8	8	8					
Batch number: 16187820004A	Sample numbe	er(s): 84484	185-8448486						
Moisture	89.5	89.44			100		99-101		

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc mg/kg	MS Spike Added mg/kg	MS Conc mg/kg	MSD Spike Added mg/kg	MSD Conc mg/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 16180SLF026	Sample numb	er(s): 8448	485-8448	486 UNSPK:	8448486					
Acenaphthene	N.D.	1.65	1.51	1.65	1.17	91	71*	83-116	25	30
Anthracene	0.149	1.65	1.71	1.65	1.40	94	76*	82-118	20	30
Benzo(a)anthracene	0.162	1.65	1.71	1.65	1.21	94	63*	76-119	34*	30
Benzo(a)pyrene	0.188	1.65	1.54	1.65	1.28	82*	66*	85-117	19	30
Benzo(b) fluoranthene	0.208	1.65	1.67	1.65	1.25	88	63*	78-129	29	30
Benzo(g,h,i)perylene	0.208	1.65	1.66	1.65	1.37	88	70*	77-118	19	30
Benzo(k)fluoranthene	0.0489	1.65	1.27	1.65	1.08	74*	62*	79-120	17	30
1,1'-Biphenyl	N.D.	1.65	1.42	1.65	1.09	86	66*	76-111	26	30
Di-n-butylphthalate	N.D.	1.65	1.57	1.65	1.27	95	77*	84-120	21	30
Chrysene	0.308	1.65	1.87	1.65	1.48	94	71*	80-121	23	30
Dibenz(a,h)anthracene	0.0969	1.65	1.55	1.65	1.25	88	70*	81-123	21	30
Diethylphthalate	N.D.	1.65	1.56	1.65	1.16	95	70*	81-118	29	30
2,4-Dimethylphenol	N.D.	1.65	1.31	1.65	1.02	79*	62*	83-120	25	30

^{*-} Outside of specification

⁽¹⁾ The result for one or both determinations was less than five times the LOQ.

⁽²⁾ The unspiked result was more than four times the spike added.



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

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Quality Control Summary

Client Name: Stantec Group Number: 1676548

Reported: 07/11/2016 08:19

MS/MSD (continued)

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc mg/kg	MS Spike Added mg/kg	MS Conc mg/kg	MSD Spike Added mg/kg	MSD Conc mg/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
2,4-Dinitrophenol	N.D.	3.31	N.D.	3.30	N.D.	0*	0*	16-132	0	30
bis(2-Ethylhexyl)phthalate	N.D.	1.65	1.62	1.65	1.26	98	76*	81-121	25	30
Fluoranthene	0.166	1.65	1.72	1.65	1.31	94	69*	81-117	27	30
Fluorene	0.127	1.65	1.58	1.65	1.28	88	70*	86-118	21	30
Indeno(1,2,3-cd)pyrene	0.123	1.65	1.49	1.65	1.21	83	66*	81-118	20	30
2-Methylnaphthalene	0.445	1.65	2.06	1.65	1.68	98	75*	83-109	21	30
2-Methylphenol	N.D.	1.65	1.50	1.65	1.19	91	72*	80-133	23	30
4-Methylphenol	N.D.	1.65	1.43	1.65	1.14	86	69*	73-125	22	30
4-Nitrophenol	N.D.	1.65	2.06	1.65	2.23	124	135*	52-133	8	30
Phenanthrene	0.367	1.65	2.01	1.65	1.67	99	79*	80-114	18	30
Phenol	N.D.	1.65	1.33	1.65	1.09	80	66*	73-122	20	30
Pyrene	0.367	1.65	2.09	1.65	1.65	104	78*	81-114	23	30
Pyridine	N.D.	1.65	1.07	1.65	0.589	65	36*	55-109	58*	30
Quinoline	N.D.	1.65	1.40	1.65	1.12	85	68*	80-119	22	30
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 161805708005	Sample numb	er(s): 8448	485-8448	3486 UNSPK: 1	P448745					
Cobalt	5.99	38.17	39.6	36.23	38.82	88	91	75-125	2	20
Lead	29.66	11.45	35.88	10.87	36.72	54*	65*	75-125	2	20
Nickel	16.07	38.17	48.84	36.23	48.48	86	89	75-125	1	20
Vanadium	45.15	38.17	82.24	36.23	84.45	97	108	75-125	3	20
Zinc	224.61	38.17	260.08	36.23	260.82	93 (2)	100 (2)	75-125	0	20

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/kg	mg/kg		
Batch number: 161805708005	Sample number(s):	8448485-8448486	BKG: P448745	
Cobalt	5.99	6.72	12	20
Lead	29.66	29.21	2	20
Nickel	16.07	18.12	12	20
Vanadium	45.15	53.83	18	20
Zinc	224.61	249.11	10	20
	%	%		
Batch number: 16187820004A	Sample number(s):	8448485-8448486	BKG: P455331	
Moisture	13.58	14.07	4	5

^{*-} Outside of specification

⁽¹⁾ The result for one or both determinations was less than five times the LOQ.

⁽²⁾ The unspiked result was more than four times the spike added.



Analysis Report

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REVISED

Quality Control Summary

Client Name: Stantec Group Number: 1676548

Reported: 07/11/2016 08:19

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: Evergreen Comprehensive VOCs

Batch number: X161813AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8448485	106	105	107	87
8448486	115	114	121	95
Blank	106	101	97	89
LCS	103	99	101	97
LCSD	101	96	101	97
Limits:	50-141	54-135	52-141	50-131

Analysis Name: Skinner 8270 (microwave)

Batch number: 16180SLF026

	Phenol-d6	2-Fluorophenol	2,4,6-Tribromophenol	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
8448485	87	83	72	82	82	84
8448486	95	87	79	84	85	89
Blank	100	100	95	94	89	92
LCS	101	100	88	94	92	95
MS	82	80	68	84	85	81
MSD	92	87	76	89	88	90
Limits:	58-122	57-126	35-136	54-123	63-117	59-129

^{*-} Outside of specification

⁽¹⁾ The result for one or both determinations was less than five times the LOQ.

⁽²⁾ The unspiked result was more than four times the spike added.

Environmental Analysis Request/Chain of Custody

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Lancaster Laboratories

Acct. # 1665 + For Eurofins Lancaster Laboratories use only
Group # 16 765 / 8 Sample # 6465 - 66
Instructions on reverse side correspond with circled numbers.

COC #324419

Client Information	'n				(4) Matrix (5) Analysis Re						Requested For Lab Use Only				se Only							
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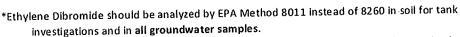
- *Ethylene Dibromide should be analyzed by EPA Method 8011 instead of 8260 in soil for tank investigations, soil reuse sampling, and in all groundwater samples.
- **Naphthalene should be analyzed by EPA Method 8260 instead of 8270 for tank investigations.
- ***Metals analysis should be total in soil and dissolved in groundwater.

16657 1676548 | 8448485 -86

This list is comprised of the combined PADEP Short List of Petroleum Products (leaded and unleaded gasoline and two: 1, 2, 4, 5, 6 Fuel Oils).

Evergreen Comprehensive List (April 2016)

VOCs by EPA Method 8260	CAS No.	SVOCs by EPA Method 8270	CAS No.
Benzene	71-43-2	Acenaphthene	83-32-9
Butylbenzene, sec-	135-98-8	Anthracene	120-12-7
Butylbenzene, tert-	98-06-6	Benzo(a)anthracene	56-55-3
Cumene	98-82-8	Benzo(a)pyrene	50-32-8
Cyclohexane	110-82-7	Benzo(b)fluroranthene	205-99-2
Dichloroethane, 1,2-	107-06-2	Benzo(g,h,i)perylene	191-24-2
Ethylbenzene	100-41-4	Benzo(k)fluoranthene	207-08-9
Ethylene Dibromide*	106-93-4	Biphenyl, 1,1-	92-52-4
Hexane	110-54-3	Bis(2-ethylhexyl) phthalate	117-81-7
Methyl tert butyl ether	1634-04-4	Chrysene	218-01-9
Toluene	108-88-3	Cresol, m- (3-methylphenol)	108-39-4
Trimethylbenzene, 1,2,4-	95-63-6	Cresol, o- (2-methylphenol)	95-48-7
Trimethylbenzene, 1,3,5-	108-67-8	Cresol, p- (4-methylphenol)	106-44-5
Xylenes	1330-20-7	Dibenz(a,h)anthracene	53-70-3
Ayrenes		Diethyl phthalate	84-66-2
		Dimethylphenol, 2,4-	105-67-9
		Dibutyl phthalate, n-	84-74-2
		Dinitrophenol, 2,4-	51-28-5
		Fluoranthene	206-44-0
Metals by Method 6010/6020	CAS No.	Fluorene	86-73-7
Cobalt ***	7440-48-4	Indeno(1,2,3-cd)pyrene	193-39-5
Lead***	7439-92-1	Methylnaphthalene, 2-	91-57-6
Nickel***	7440-02-0	Naphthalene**	91-20-3
Vanadium***	7440-62-2	Nitrophenol, 4-	100-02-7
Zinc***	7440-66-6	Phenanthrene	. 85-01-8
ZIIIC	, 110 00 0	Phenol	108-95-2
		Pyrene	129-00-0
		Pyridine	110-86-1
		Quinoline	91-22-5

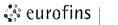


^{**}Naphthalene should be analyzed by EPA Method 8260 instead of 8270 for tank investigations.

This list is generated from the PADEP SERO Crude Oil Parameters for Corrective Action (CDB| SERO|PADEP|9 Aug 2013) combined with PADEP Short List of Petroleum Products (leaded and unleaded gasoline and No. 1, 2, 4, 5, 6 Fuel Oils).



^{***}Metals analysis should be total in soil and dissolved in groundwater.



Sample Administration Receipt Documentation Log

Doc Log ID:

151816

Group Number(s): 1676548

Client: Stantec

Delivery and Receipt Information

Delivery Method:

ELLE Courier

Arrival Timestamp:

06/27/2016 17:00

Number of Packages:

1

Number of Projects:

1

State/Province of Origin:

PA

Arrival Condition Summary

Shipping Container Sealed:

No

Sample IDs on COC match Containers:

Yes

Custody Seal Present:

No

Sample Date/Times match COC:

Yes

Samples Chilled:

Yes

VOA Vial Headspace ≥ 6mm:

Air Quality Samples Present:

N/A

Paperwork Enclosed:

Yes

Total Trip Blank Qty:

0

Samples Intact:

Yes

No

Missing Samples:

No

Extra Samples:

No

Discrepancy in Container Qty on COC:

No

Unpacked by Patrick Engle (3472) at 17:31 on 06/27/2016

Samples Chilled Details

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

Cooler # 1

Thermometer ID

Thermometer Types:

Corrected Temp

Therm, Type

Ice Type

Ice Present?

Ice Container

Elevated Temp?



Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mĹ	milliliter(s)	Ĺ	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

< less than

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basisResults printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

B - Analyte detected in the blank

C - Result confirmed by reanalysis

E - Concentration exceeds the calibration range

J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)

P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.

U - Analyte was not detected at the value indicated

V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference...

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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